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THE POTTERY AND GLASS INDUSTRIES
OF THE
NORTH-WEST PROVINCES AND OUDH.

FROM MONOGRAPH BY
MR. H. R. C. DOBBS, C.S.

E. 13601

Thirteen Plates illustrating
Biswan, Gonda, Bulandshahr, Chunar,
Azamgarh, Amroha, Rampur, Aligarh, and
Lucknow Pottery.
Lucknow Glass Ware.

RAM SINGH DEL. MAYO SCHOOL OF ART LAHORE

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The Journal of Indian Art and Industry.

THE POTTERY AND GLASS INDUSTRIES OF THE NORTH-WEST PROVINCES AND OUDH.

FROM A MONOGRAPH BY MR. H. R. C. DOBBS, C.S.

CHAPTER I.

THE POTTERY TRADE, ITS HISTORY AND DIVISIONS.—Earthen vessels made on the wheel have been used in Hindustán without doubt ever since the Aryan invasion. The first known mention of them is in the Rig Védá, and by the traditions of these provinces their invention is attributed directly to the gods. One of these legends tells how Kopá Bhagat Rishi, the fabled progenitor of the potter caste, was ordered by Parméswar to make earthen vessels. The Rishi's primitive method involved the baking of the pots for a full year; but on one memorable day, the Sukat Chauth or birthday of Ganéshá, after he had filled his kiln, a cat gave birth to some kittens in one of the pots. Hereupon the saint prayed earnestly for the safety of the kittens, who were preserved by Parméswar's causing the vessels to be baked in the miraculously short time of one day. The residence of Kopá Bhagat is said to have been at Jagganáth, which is accordingly regarded by potters as their headquarters. Another account is that in old days people used to work up the clay for pots with their spittle, and Parméswar deeming this unclean revealed the secret of the wheel.

Whatever their origin may be, traditional ceremonies, superstitions and observances in which earthen vessels play a part are inwoven with the life of a modern Hindu from his birth to his death. In spite of this fact, the rules relating to them in the Hindu and Muhammadan scriptures are very few.

In the Smrití Sloka of Yajnavalkya we are told that an earthen pot once touched by food can be purified by being baked again in fire, but if touched by filth it can never be purified. The Matákshara asserts that an earthen vessel must be thrown away if touched by a Chándála, or man of like caste, while in one of the Shastrás the special privilege of using earthen vessels for three days without contamination is given to the inhabitants of the holy city Benares. In strong contrast to this dislike of earthen vessels on the part of the Hindus is the practice of the Muhammadans, who are enjoined in the Darrimuktar to use them rather than metal vessels, for the reason that the Prophet of God has said that "those who keep earthen vessels in their houses are visited with respect by angels."

The pottery trade of these provinces is divided into five branches, namely,—the manufacture of rude red pottery, of rude glazed pottery, of painted and unglazed coloured wares, of ornamental pottery painted and glazed, and of clay models.

CHAPTER II.

ARTICLES OF DOMESTIC USE.—The largest of these is the *mát*, *mathor* or big *matká*, the price of which ranges from three to eight annas. It is used for the storage of water. Smaller *matkás* are sold for one anna. The *gharra* or *gagarí*, sold usually for about three pies, is used for drawing water from wells and for carrying water. It differs considerably in different districts in the width of its mouth and the shape of its body. The *matkí* is a squat vessel with a wider mouth than the *gharra*, and is used for storing water. The *kúnr* or *kowára* is a vessel like the *gharra* with a longer neck, much used in Oudh for irrigation from wells. The *gudrua* is a picturesque vessel used for carrying and storing Ganges water. It has two ears, one on each side, pierced with holes so that it can be slung up by a rope. The average retail price of all these vessels is three pies. They are used for storing grain as well as for water. A *gharra* used for carrying water does not usually last more than three months, while if used for storing water or grain it may last for several years. The *surdhi jhajhar* or *kúza* is a long-necked jar of various shapes. Its selling price is two for three pies, and it lasts, if in constant use, for about a month. It is used especially in the hot weather for holding drinking water, chiefly by Musalmáns. It is nearly always ornamented with incised patterns or moulded designs, and is very commonly coloured. The *lutka* is a small vessel shaped almost like a cylinder, used for taking water out of a larger vessel. The *badhaná* is shaped like a small *gharra* with a spout in the side. It is used by Musalmáns for bathing and especially for their religious ablutions, and is consequently never used by Hindus. The *karua*, called in Almora and Garhwál *alúwa*, which exactly resembles the *badhaná*, except for the fact that it has only a hole where the *badhaná* has a spout, is used largely for carrying water, and is besides a semi-religious vessel, being necessary to various domestic rites of the Hindus. The *ábkhora* or *bholna* is a drinking mug used almost exclusively by Musalmáns, and the *shakora* closely resembles it, being generally rather taller. Their price is three pies a pair. Of these water vessels the *suráhi*, the *abkhora* and the *shakora* are commonly made by Musalmán potters or *kasgars*, when they are to be found, while the rest are made by Hindu potters. But while Hindus often engage in the manufacture of the smaller drinking cups, Musalmáns appear to very rarely make large vessels such as *gharras*.

Owing to the religious prejudices of the Hindus, the use of earthen pots is practically confined to Musalmáns, except in the case of travellers, who cannot carry much luggage. Musalmáns and low caste Hindus use chiefly the *hándi* or *hanriya*. That used by Musalmáns is squat-shaped and wide-mouthed, as it is used for cooking

meat. The Hindu *hándi* is used only for grain and vegetables, and is a longer, narrower vessel. The price is about two pies. The *degchi* is much like the *hándi* and used for the same purpose. The *tandúr*, which is found chiefly among the Musalmáns of the northern districts, is a large egg-shaped jar heated by a fire which burns inside it. Bread is baked on the outside. The *kapari* or *karheiya* is a big platter on which both Hindus and Musalmáns parch grain. The *kundá* or *konrá* is a thick basin in which Musalmáns knead their flour. The *tawá* is a round plate on which bread is baked over a fire.

Vessels for eating out of.—These again are used only by Musalmáns or very low caste Hindus. The *piyála* is a shallow bowl out of which meat is eaten after being served up in the *tabáq* (a large plate). Meat is also sometimes eaten out of the *rakábi, sanaki,* or *sainak*, which is like a soup-plate, but in this rice is more commonly served. The *chammal* and the *tashtari* are dishes rather smaller than a *tabáq*, and the *sifalí* and the *chimlí* much resemble the *piyála*. Of these vessels the larger are sold for about six pies each, and the smaller for one pie each.

Vessels for storing Grain and Dry Goods.—*Matkás* and *matkís* are the vessels most commonly to be seen in the shops of grain-sellers and in cultivators' houses, being used for storing purposes. When a larger vessel is needed a *dahará* or a *daharí* is used. The first is a cylindrical vessel sometimes as much as six feet high, and is generally of unbaked earth, made by the potter inside the house where it is to stand; the second is a small edition of the first, and is baked in the kiln. For storing pickles and tobacco a long jar called *martabán* or *amritbáns* is used by both Hindus and Musalmáns. It is generally covered with lac on the outside.

Vessels for storing Milk, Oil, &c.—The *dudhándi*, the *maliya* with a smaller mouth, and the *maheri*—all resemble one another, and are used for storing milk and making butter. The *gariya* is a round-bottomed flask in which *ghi* is kept. These all sell for about two pies.

Vessels used by Wine Sellers.—The *khujua* is a very small saucer, holding about a mouthful of spirit, supplied by licensed vendors gratis to their customers, who throw them away after drinking once. They are sold at the rate of 3,000 for Re. 1. The *bhurká* is a rough earthenware bottle holding about one seer, which often takes the place of a glass bottle.

Pipes and their parts.—Native pipes for tobacco-smoking consist generally of two parts—the *huqqa* or water-holder, and the *chilam* or tobacco-holder, these two parts being separated by the stem (*naicha*). Owing to the rule that an earthen vessel may be contaminated after touching water, no self-respecting Hindu can use an earthen *huqqa*, which is only found among Musalmáns and very low-caste Hindus. The *huqqa panchkora* has a saucer fixed on to its base, which is pierced with small holes. The water to be used for cooling the tobacco is poured into the saucer, and when the smoker begins to smoke, is drawn up through the holes into the body of the *huqqa*. The *huqqa gauriya* is smaller than the common water bowl, and is made at Benares and Allahabad; sold with the tobacco bowl for three pies. The *huqqa madariya* is smaller and lighter than most, and is sold for three pies with the tobacco bowl and the stem. It is peculiar to Lucknow. The common *huqqa* is sold for three pies alone. The *chilam* or tobacco bowl is sold at the rate of eight for three pies. *Chilams* made by Musalmán potters are for some reason usually considered superior to those made by Hindus, and they are peculiar for the broadness of the upper part (*chaturi*). The *chilam* for hemp-drug smoking is much narrower than that for tobacco, and has scarcely any bowl. It sells at the rate of twelve for three pies.

Agricultural Vessels.—The most important of the vessels used in agriculture is the *kúnd*, which is tied on to a rope in order to raise water from the well for irrigation. Ten or twenty of these are often broken in one day by the cultivators using them, and their consumption is therefore very large. The *kúnd* is one of the vessels supplied in most districts in return for customary dues received from the cultivator. The *kalsi* or *kalsá* is shaped much like a *mitki*, and is used to contain the sugar-cane juice when first pressed out. The *nánd* is a large thick vessel used as a feeding trough for cattle.

The *chirágh* or *diya* is the common oil-lamp of the country, and is a tiny earthenware saucer holding about two chittacks of oil; the price is about one anna a hundred. The *dawait* is a small circular ink-pot, sold at four annas a hundred. The *gamla* is the common flower-pot, costing about Rs. 3 a hundred. The *makán ki jáli* is a pierced tile or screen set in walls to serve as a grating. The *nagara* and *nagaria* are hemispherical basins which are formed into drums by stretching parchment tightly across their mouths. They are sounded in temples on certain occasions.

CHAPTER III.

Materials and their Preparation.—There are two kinds of clay which seem to be common to almost every district. The first is of a dark grey colour, sometimes nearly black, found at the bottom of every village tank or pond. This clay when baked by itself is of a dull red colour, and produces a very strong earthenware. It is accordingly used for large vessels such as *nánds* and *gharras*, and for all cooking pots that have to stand the fire. It is also used for all glazed ware. Its common name is *káli mitti* (black earth), but there are many local variations. The second clay is light red or dark yellow, and is to be obtained in every district either on the surface of the ground or a few feet below it. It is more easily manipulated than the grey clay, but more brittle and porous. It is used for the manufacture of small articles, such as cups, saucers, and earthen lamps. In most districts it is known as *píli mitti*, or yellow earth. Besides these two common clays, various districts contain special kinds. Thus in Bareilly, a whitish clay used for glazed ware is called *paterí mitti*. In Benares *kandai*, a light grey clay, is made into tiles. For the ornamental ware of Nizamabad in Azamgarh, a whitish flaky clay found at the bottom of one small pond, and called from the place *Bhairopur ki mitti* is used. The Chunár ware is made from two special clays called *nakti* and *khasi*; in Garhwál *chopari mati* is the name of a pink adhesive clay, and in Rae Bareli *pindrohi* is a whitish earth. The light brittle vessels of Amroha are made from a tenacious black clay called *gwalchaná*, and the porous goglets of Agra from a grey friable clay called *chila*. Lucknow, again, has a fine light grey clay known as *potá*, and the special clays round Naini in the Allahabad district, from which jail pottery is made, are *gharhoti, karái,* and *karbota*.

No true China clay, such as exists in a few places in the Panjáb, is to be found in the North-Western Provinces and Oudh, and the wares made are always red in colour unless glazed or painted externally.

Cost of Clay.—By the village potter the clay is always dug out of a tank or from the common waste lands, where there are well-known patches to which he resorts with his donkey or bullock. In the case of village potters no charge is made for this clay, as the potter in return supplies the landlords with household vessels for nothing. Town potters, however, have in most districts to pay for their clay, as they have nowhere a special patron from whom they can get it free.

Preparation of Clay.—The clay is usually kept in heaps outside the potter's door for two or three days before he prepares it for use. The black clay is kept in one heap and the yellow clay in another. When it is thoroughly dry it is pounded with a heavy wooden mallet called *mugari* or *mongri*, and is then sifted through a sieve or osier basket known as *chalni*, *chhulná* or *hangua*. In Farukhabad the pounded earth is sifted by being poured over an inverted *gharra*, when the coarser pieces roll far away, and the fine powder falls close to the *gharra*. In Hamírpur the sifting is done through the strings of a native bed (*charpoy*), held up slanting, while in Rámpur the clay is ground in a hand-mill. The coarser pieces of earth are next put into water and left till they are dissolved, when the fine powder is added, and the whole worked up into a stiff paste. This paste is now sliced either with a common sickle (*hasiya*) or with a two-handled bow-shaped instrument. In some places no slicing instrument is used, but the dough is merely kneaded with the feet or hands. During the process of kneading, any substances required to alter the consistency of the clay, strengthen it, or prevent its cracking, are added. Usually, yellow clay is mixed with black clay at this stage in varying proportions, as black clay alone is apt to be brittle. The proper admixture is sometimes discovered by making test vessels and seeing whether they crack on exposure to the sun. In all districts wood ashes or cow-dung ashes are added to the clay, both at the kneading stage and after the vessel has been shaped. This is done to prevent the clay sticking to the hand or the various instruments used in shaping it. To enable the clay to stand the heat of the kiln without cracking, river sand is added to it in the districts of Budaun, Bareilly, Sháhjahánpur, Hardoi, Bulandshahr, Garhwál, Basti, Sultánpur, and Kheri. The amount of sand is, in most cases, about one-tenth of the whole mass; but in Basti it is stated to be as much as one quarter; and in Kheri, where the clay must be most unsuitable for pottery, fine sand is added in the proportion of one to four for common articles, and for cooking vessels the mixture is composed half of clay and half of coarse sand.

In most districts, however, where sand is not easily to be had, chaff, husks, or chopped straw are added to the clay, making about one-twentieth of the whole mass. Lucknow appears to be the only district where there is not a single instance of the admixture of either sand or chopped straw with the materials from which common vessels are made, whence it may be concluded that the Lucknow clay is especially well-adapted to the purposes of the potter. Various other substances are sometimes used for the toughening of the clay. In Sháhjahánpur and Aligarh two and a half tolas of cotton-wool are mixed with one seer of clay for common ware, and for the Aligarh pottery known as "kankar" ware pounded nodular limestone is added. In Rámpur, Hamírpur, and Bánda powdered horse or mule dung, or rotten paper, are some of the ingredients; while the makers of the Lucknow figures prepare their special paste by mashing up a half seer of *babul* tree gum, one seer of *belgiri*, half a seer of brown paper, and half a seer of old cotton-wool with one seer of common black clay.

This sifting and kneading of the clay takes, as a rule, about three days, though sometimes one day only is spent on this work. Enough clay is ordinarily prepared at one time for the fashioning of one batch of vessels. When it is quite ready, it is made up into round balls weighing from seven to twelve seers, and is stored either inside the potter's house or in a pit about five feet in depth. Here it is usually left for at least three days, until it has lost some of its superfluous moisture, when it is ready for the wheel.

The coloured earth called *kabiz* is prepared for application by admixture with the saline earth called *reh*, pounded mango bark or catechu and *babul* gum. The leaves of other shrubs are sometimes added. These are all pounded in a mortar mixed with rain or pond water (never with well water), and left to ferment in a pot for three days. At the end of that time the muddy solution is strained off, and is ready for use.

CHAPTER IV.

Throwing on the Potter's Wheel, Pressing in Moulds and Baking.—All earthenware—except the very largest vessels, toys, a few ornamental wares, and some special articles, such as pipe-bowls and water goglets, are fashioned on the wheel. The technical term for this in English is "throwing," and in Urdu *bhánná* (to twist round), or *chák par gondá márna* (to beat the clay lump on the wheel).

Potters' wheels are of three kinds (No. 57). The first, and commonest, which is found in every district, is the single wheel (*chák*), turned by hand and supported on a wooden axis turning in a pivot fixed to the ground. The second is identical in shape with the first, but instead of resting on a pivot it has a ball of lac attached to its under surface, on which it revolves. It is called *kunda*, is turned by the hands or feet, and is peculiar to Hamírpur. The third is a double wheel fitted into a pit and turned by the feet. It is used only in Rámpur, Muzaffarnagar and Meerut. The common *chák* is made either of clay, stone, or wood—most commonly of clay. The clay wheel is made by the potter himself from ordinary black earth mixed with goats' hair, and dried in the sun. In some cases cross pieces of wood are let into the under surface of the wheel to strengthen it; and in Almora the wheel is composed of two cross boughs, between which twigs are woven and tied together with ropes, the whole being covered with a thick coating of clay. The diameter of the wheel is about 3 feet, and the thickness 3 inches; its weight is about 2 maunds. In the centre of the upper surface a slab of baked clay or stone is let in. In the centre of the under side is a stone slab, in the middle of which is a hole for the axle. The axle itself is a wooden or iron pin. The lower end of the axle is either fitted into a wooden block fixed to the ground, or into a hole in the ground stuffed with rags. On the upper surface of the wheel are four holes near the circumference, into one of which the turning stick is fitted. The turning stick, which is about 3 feet long, has a large number of names. A wheel of clay can be made in four days and costs the potter nothing. It lasts for about five years. A stone wheel, which

will last a lifetime, costs on an average Rs. 4, and is usually brought from Mirzapur or Indore. A wooden wheel lasts for about ten years and is made by a local carpenter for Re. 1-8.

The *kúnda* is used only by the Hundairia potters of Hamírpur, and is said to turn out coarse and misshapen vessels. It is probably the primitive form of the wheel, and as such is interesting. It is a clay disc with a slight hollow in the centre of its lower surface, to which a small hemisphere of lac is attached. This hemisphere serves the purpose of an axle, and revolves on a slab of stone or wood resting on the ground.

The double wooden wheel consists of two wooden discs fixed two feet apart on an axle 2 feet 6 inches long. The smallest disc, about 10 inches in diameter, is that on which the clay is worked. It is called *patri*. The axle is called *masal*, and the larger disc 2 feet across is named *bará chák*. The whole wheel is placed in a pit about 3 feet deep, the smaller disc being on a level with the surface of the ground. The axle turns on a stone slab at the bottom of the pit, and is kept upright by a cross-beam with a hole in the middle, through which it runs. The worker sits on the edge of the pit, and turns the wheel by pressing the lower disc with his right foot. The motion of this wheel is more even and continuous than that of the single wheel, and is used for the finer kinds of pottery at Rámpur and Meerut.

Other Instruments used in Throwing.—(1) The cutting string.—For small vessels a lump of clay containing material enough for several articles is placed on the wheel, and each vessel as it is moulded has to be separated from the rest of the lump. This is done by drawing a string gently through the clay at the place where it is to be cut, while the wheel is turning at full speed. The string is sometimes attached to a light handle of reed. In Fyzabad, larger vessels are separated with a thick knife called *tor*.

(2) The pestle and mallet (No. 58).—A large vessel, such as a *gharra* or *hándi*, is only roughly formed on the wheel, its sides being much thicker and its whole shape narrower than that of the finished vessel. The rough shape, while still damp, is rounded and enlarged by being beaten out with a pestle (*pindi*) and mallet (*thápá*). The pestle is an earthenware disc with a round handle, and the mallet resembles a thick, flat, wooden ladle. The pestle is held in the left hand against the inside of the vessel, while with the mallet in his right hand the workman beats the outer surface over the spot where the pestle is held. The pestle is also used for beating out the flat bottoms of such vessels as have their parts fashioned separately.

(3) The rest or support for unbaked vessels.—While the vessel is being shaped, as described above, it is held up in a rest, which is usually the semi-circular half of an old *gharra*, but is sometimes the thick basin called *kúnda*, and sometimes a specially prepared hollow earthenware cone (*ánthra*).

(4) The water-jar is kept by the side of the wheel, and the potter continually wets his hands in it as he works. The cutting thread is always kept soaking in this jar. The yellow clay used for small articles is also usually kept wet in the water-jar. In one or two districts a basket of sand stands near the wheel for the potter to dry his hands in, when necessary.

(5) The slab.—Before being placed on the wheel, the prepared balls of clay are brought out and kneaded together on a stone or wooden slab called *patri*.

(6) Polishing and scraping instruments.—Pipes, bowls, goglets, and a few other articles are polished and scraped before being baked, after they have dried for a few hours. For this purpose they are fixed a second time on the wheel, which serves the purpose of a turning lathe. The commonest scraping instrument is a hollow hemisphere of iron with a circle cut out of its bottom. Both the edges of this circle and the rim of the hemisphere itself are applied at various times to the outside of the vessel which is being polished. This instrument is in most districts called *khuria*. Besides this, an iron blade called *chelni* is often used. After the scraping, the final polish is given by pressing against the revolving vessel either an earthen cup, a shell, a stone, a peeled stick, or a piece of cloth.

(7) The designing chisel.—Incised ornamentation and lines are produced by drawing on the unbaked vessel with a thin pointed chisel. A sharp pebble is sometimes used instead.

(8) The brush.—The reddish-coloured earth *kabiz* is applied to all vessels made by throwing with a brush (*qalam*) or a rag.

Method of Manufacture.—A *gharra, hándi* (No. 58), or other big vessel is made as follows:—The potter takes his lumps of prepared clay out of the pit where they have been drying for two or three days, kneads them together on the slab, wets his wheel, and places about three seers of the clay on the earthenware centre. Then he starts the wheel with his hands, takes up the turning stick, and deftly fits it into one of the holes on the circumference of the wheel as they pass round. Grasping the upper end of the stick with his right hand and the lower with his left, he gives it a few vigorous turns, and the wheel is set spinning so evenly and steadily that it will show no signs of falling for at least five minutes. He now throws aside his stick, squeezes the lump of clay with both hands, and thus twists it into a short spiral mound technically known as *jár*. Into the centre of this mound he plunges his right fist until he has made a hole, into which he inserts the thumbs of both hands, and presses outwards with the ball of each thumb in opposite directions until he has produced a symmetrical basin in the top of the stand of clay. Then he stretches his fingers down the outside of this basin and pulls up the rim evenly all round, gradually narrowing the diameter: during all this operation his hands have been continually moistened in the water-jar. The rough shape of the vessel is now revolving on the top of the pillar of clay. The potter takes the cutting string from the water-jar, and separates this rough shape called *bút* from the pillar. The result is a cylinder of moist clay, slightly bulging in the middle and without a bottom (No. 57). Some workmen, however, by applying the cutting string lower down the clay pillar, secure a bottom to the rough shape. The practice differs in different villages and depends on the tenacity of the clay. This cylinder is placed in the earthenware rest, and left to dry for 24 hours. It is then taken out of the rest and placed on a board, and its bottom is filled in on this board with kneaded clay, manipulated by the potter's fingers. Cow-dung ashes are now sprinkled over the whole vessel, and it is beaten out with a pestle and mallet. When the final shape has been arrived at, the vessel is set aside to dry for another period of two days. It is then brought out again, and a solution of common yellow earth is spread over it with a rag. This process is called *múnj*. The vessel is now once more dried for 24 hours, and

then a solution of the rust-coloured earth (*kábiz*) is applied to the upper half with a brush or rag. It is next set aside for a final drying of two days, and is then ready for the kiln. The whole process of preparing a *gharra* for the kiln thus takes about seven days.

The Kiln for Common Wares.—The kiln for common red pottery and the coarser kinds of coloured wares consists of a circular pit about 3 feet deep and about 8 feet in diameter. At the bottom is always left a layer of the ashes of former bakings about 3 inches thick. On these is set a layer of cow-dung cakes, and above this alternate layers of vessels and cow-dung cakes, each successive one of which lessens in diameter, so that the whole pile is shaped like a cone. The unbaked vessels are always placed with their mouths downwards, slightly inclining towards the centre, and are built up round two bottomless *gharras* placed one above the other in the centre, to serve as a chimney. The whole cone-shaped pile is covered over first with cow-dung, then with straw and last of all with clay. Several holes are pierced in the covering all round the kiln near the ground, a smouldering piece of cow-dung is dropped down the chimney, and the furnace becomes lighted and burns itself out in about 24 hours in the hot weather and in about 36 hours in the rains.

The Kiln for Fine Wares.—The kiln for the baking of finer wares and glazed pottery is universally called *bhatti.* It is a cylinder about 5 feet high, built either of bricks or clay, divided into two stages by a pierced flooring of clay, or (as at Aligarh) of perforated iron. There is a door for both stages, the upper of which holds the articles to be baked, while the lower is the furnace. When the upper stage has been filled, it is roofed over with round earthen platters and the fire is lighted. The fire is put out after about 24 hours, and the kiln is allowed to cool for 6 hours, when the vessels are taken out.

CHAPTER VI.

Ornamental Wares.—The Chunar pottery (No. 49) is quite distinct from any other kind produced in these Provinces. Its colour is a dark brown, approaching, when glazed, to black, and is apparently due to the use of the special clays noticed in Chapter II. The ornamentation and shape of the wares is purely English, and generally classic in character. In the whole range of patterns, which is very large, there is hardly one to be seen bearing any traces of Oriental origin. The Azamgarh pottery (No. 49) is a black and reddish-brown ware ornamented with designs in silver foil. After the baking, silver foil or an amalgam of mercury and tin is rubbed with the thumb nail into lines etched with a sharp instrument on the unbaked ware. The articles produced are chiefly tea-pots, sugar-bowls, candle-sticks, vases, and the like, the price of which is very moderate.

The ornamental pottery of Lucknow (Nos. 52 to 56) is of four kinds:—(1) Goglets, plates, cups and saucers ornamented with simple designs in bright unglazed colours. (2) Trays, plates and vases painted with varnished colours, the background of red ochre, gamboge, aniline purple, or cochineal, and the designs in solder, white lead, or native ink. The effect is brilliant and bizarre, and the patterns attractive. (3) Models of fruit and vegetables. These models are at once the cheapest and best of all those made in India, being acknowledged superior to those of Krishnagar and Poona. Every conceivable fruit and vegetable is imitated, from a huge bunch of plantains or a jack fruit to a dried onion, and the colouring is very realistic. (4) Lucknow figures (No. 53). These celebrated figures differ from, and are superior to those of Krishnagar, from the fact that the modellers do not use actual hair, wool, pieces of clothing, and other accessories for their decorations, but use clay instead, which gives them greater durability. The larger figures are realistically coloured, while the smaller and cheaper ones are coated with red ochre, which, when dried, presents the appearance of Italian terra-cotta. Moulds are used for the trunks of the figures alone. The artists model the head and face, the curves of the body, and the limbs with their fingers and a graving tool. These figures are very cheap.

Bulandshahr, Meerut and Rámpur Pottery (Nos. 48 and 50).—This glazed pottery, which is properly called a faience, has a red earthen body covered with an opaque white enamel, in which flint is a large ingredient, painted chiefly in dark blue and turquoise, but sometimes in claret colour or yellow. The designs, which are strictly conventional, are drawn by artists who receive from 8 annas to Re. 1 a day. This ware is the most effective of the various kinds manufactured in the Provinces, and owes much to the interest taken in it by the late Mr. Growse and His Highness the Nawáb of Rámpur. In style it resembles almost exactly the ware of Multán, whence its manufacture was originally introduced.

Amroha Pottery (No. 50).—This is a peculiar, thin, and brittle ware, white and ornamented in colours and in gold and silver leaf. The lightness of the ware is due to the special qualities of the clay of which it is made. Before baking, the vessel is covered with a coating of *kharya mitti.* For the application of the gold and silver leaf the pattern is broadly marked in wax, and the leaf put on over this.

Aligarh Pottery (No. 51).—This pottery resembles that of Chunar in style. The ornamentation is European in character, consisting of fruits and flowers in relief, which are impressed in moulds and affixed to the surface of the pottery before baking. The ware is coal-black and slate coloured, and the main ingredient is *kankar* (carbonate of lime).

Pottery of Gonda and Sitapur.—At Atraula in Gonda and at Biswán in Sitapur, *gharras* and other common vessels are painted by local artists in flower patterns (Nos. 47 and 48). The designs have been entirely unaffected by European influences, and are consequently uncommon and delightful.

CHAPTER IX.

The Glass Trade.—The manufacture of glass was known in ancient India as early as 800 B.C., for in the Yajur Veda, generally supposed to have been written about that time, glass is mentioned as one of the articles of which female ornaments were made. It is also noticed in the Mahábhárata, and in an old book called the Yuktikalpataru the effects on the human system of drinking water out of a glass tumbler are stated to be the same as those of drinking out of a crystal cup. In more recent times, during the sixteenth century, the glass of India is said to have been exported in large quantities to Europe; and in the north of Italy there is a tradition that the Venetians at one time obtained, if not their raw glass, at least its ingredients, from the plains of Hindustán.

CHAPTER XII.

The Manufacture of Blown Articles made of Country and European Glass (No. 57).—Small phials and flasks for holding Ganges water are blown in Aligarh, Bareilly, Bijnor, Bulandshahr, Etah, Rae Bareli, and Sahāranpur. In Sahāranpur are also made (by blowing) syphons, toys full of coloured liquid called *panchkora*, and glass mouthpieces for *huqqas*. These are all apparently made from country glass. In Benares, Dehra Dún, and Lucknow are made (by blowing) pickle-jars, small lamp globes, lamp chimneys, vases and phials from European glass. In Benares also there are four workshops which turn out the thin glass known as *tikli* glass, used for the manufacture of the *tikli* or glass patches worn on the forehead by Hindu women.

The furnaces (No. 59) for the manufacture of blown articles are in all districts called *dás*. They vary considerably in shape, but all resemble one another in the possession of at least one annealing oven. They are always built under a roof. The following is a description of the furnace in use in Lucknow. This furnace is a clay cube about 5 feet high, 10 feet long, and 3 feet broad, built over a pit in which the wood burns. It is divided up into two storeys. The lower front compartment is directly above the fire, and its floor is pierced with a hole through which the flames come. This lower front compartment is used for the melting of the glass, which is held either over the flames until it is soft or fused in a large crucible called *khudda*, which is let into the floor of the melting compartment, so that its bottom is above the actual fire. The melting compartment has one large horse-shoe shaped door in front and smaller ones on each side. In front of the large door is an earthenware screen with a semi-circular groove in it, called *adi*. This serves as a rest for the rod, at the end of which the vessel is twisted round at one of the stages of manufacture. The upper front compartment and the two back compartments are annealing ovens (*aodán*) for the cooling-off of the vessels when made. The upper front compartment is the hottest and the lower back compartment the coolest. The vessels are left to cool in each compartment for four hours before being exposed to the outside air. The fuel used is wood.

Tools used.—The tools (No. 59) used in the manufacture of blown articles are:—(1) *Nál, phúnkna*, or *dhotáli*, an iron blow-pipe, usually a piece of an old gun barrel. (2) *Kúnd, kunj*, or *sarhendi*, a solid bar of iron which is attached to the bottom of the bubble of glass when blown. (3) *Mála*, a dagger-shaped pressing instrument. (4) *Másá* or *máshá*, pincers of stout iron wire, shaped like a big hair-pin, used for working the rough edges of an article into shape and separating it from the blow-pipe. (5) *Chimta* or *ambár*, broad iron tongs for placing broken pieces of glass in position in the furnace. (6) *Síkh*, iron spit for moving about and turning over the melted glass. (7) *Sil*, slab of stone on which the end of the blow-pipe is rolled round to squeeze together the pieces of glass picked up. (8) *Chakal*, a disc of warmed country glass by which a lamp-chimney is fixed on to the *kúnd* (iron rod) in one of the final stages of manufacture. The country glass, being a different substance from the European glass, does not coalesce with it, and is easily detached when the chimney is complete.

Process of Manufacture of Blown Articles.—The process of blowing is practically the same in all districts, whether conducted with European or country glass. The following is a description of the making of a glass pickle-jar or *achári* at Lucknow:—There are two workmen engaged at the furnace. A broken tumbler is placed on the floor of the front melting compartment, or the edge of the hole through which the flames of the fire are shooting up. After about five minutes the first workman takes it up with the tongs, and attaches it to the end of the blow-pipe, which he has previously smeared with a gum made of saltpetre, borax, arsenic and water. He then hands it [illegible] the second workman, and receives from him a second blow-pipe with a fused mass of glass attached to its end, which he will blow and shape while the fragment of the tumbler is in the hands of the second workman. The latter holds the fragment of the tumbler over the fire at the end of the blow-pipe for about five minutes until it is thoroughly fused, when he takes it out and rolls it round on the stone slab, patting it into a round ball with the dagger-shaped tool called *mála*. After this he plunges it into a jar of water to cause all the air-bubbles to escape, and fuses it again over the flames for another five minutes. He then hands it over to the first workman, who warms it once more, and then blows into the pipe for about ten seconds till a bubble one inch long protrudes from its end. He repeats this warming and blowing process three times, until the bubble is four inches long. Then he places the blow-pipe on the grooved rest in front of his furnace, so that the bubble of glass is over the flames, and twirls it rapidly round in order to get the shape even. After this he swings the blow-pipe twice round his head, elongating the bubble by the centrifugal force, and warms it again. This swinging and warming process is repeated five times. He then flattens out the bottom of the bubble by pressing it against the side of the furnace. Next he takes the *kúnd*, a solid bar of iron, and sticks it into the centre of the bottom, making the bottom rise into a cone inside the vessel. The glass bulb is now held between the blow-pipe and the iron bar. The workman next takes the tweezers of stout iron wire, dips them into water and grips the stem of the bulb with the tweezers just at the point where the blow-pipe inside the stem ends. The stem cracks round this line under the touch of the moist tweezers, and the blow-pipe is left with about three inches of neck round its end, while the main body of the vessel is stuck by its bottom to the iron bar. The fragment on the blow-pipe is knocked off, and put among the broken glass to be melted up again. The workman now turns the iron bar, to which the incomplete vessel is fixed, on the socket in the screen before the furnace, until the rim is well warmed. He then takes it out and works the tweezers about inside the rim of the vessel till he has got it to the proper shape. The vessel is then cooled for four hours in each of the three annealing ovens.

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47.—Biswan (Sitapur) and Gonda Pottery.

Bulandshahr.

Gonda.

Bulandshahr.

48.—POTTERY.

DRAWN BY
BHAIRAV BAKHSH AND FAZLUD DIN I.
ARCH. SURVEY, N.W.P.

49.—CHUNAR (1, 2, 3) and AZAMGARH (4, 5, 6, 7) (Nizamabad) POTTERY.

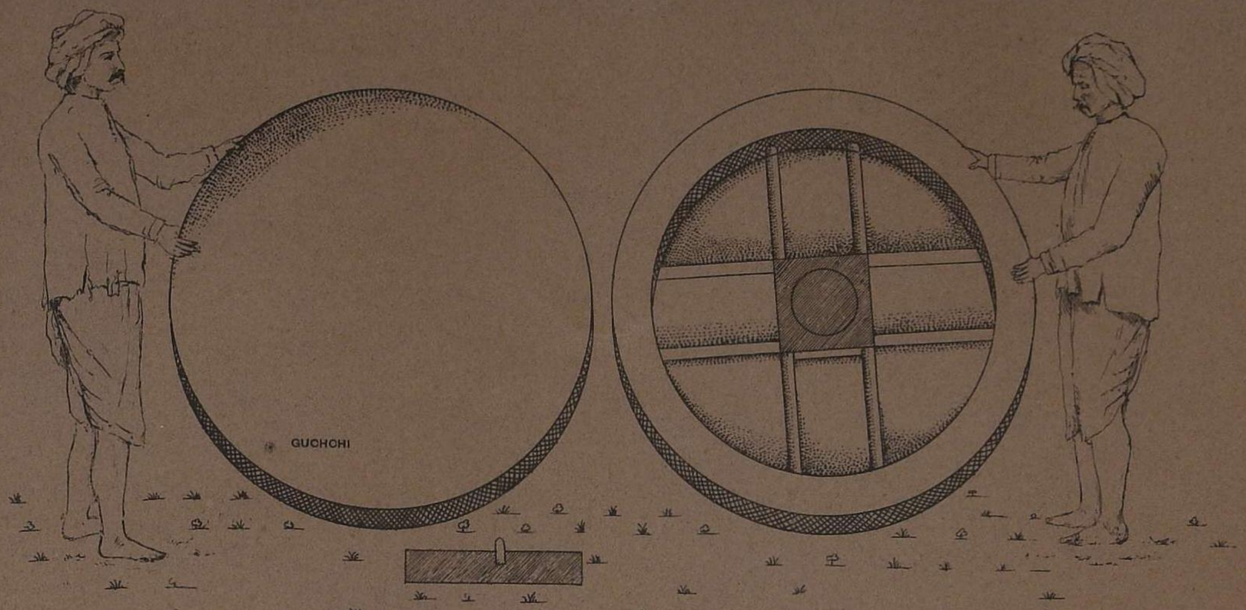
50.—AMROHA POTTERY (1, 2, 3, 4) painted.
RAMPUR POTTERY (5, 6, 7) glazed.

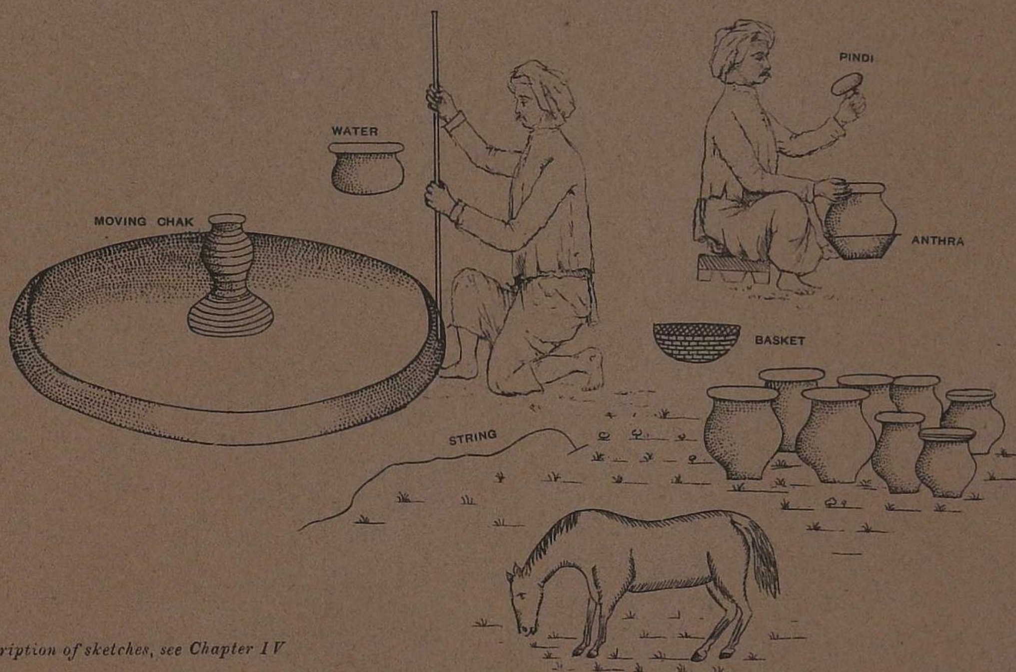
DRAWN BY SOHAN LALL.
ARCH. SURVEY. N.W.P.

54.—Lucknow Pottery (1 to 38).

55.—Lucknow Pottery (38a to 71).

56.—LUCKNOW POTTERY (72 to 116).





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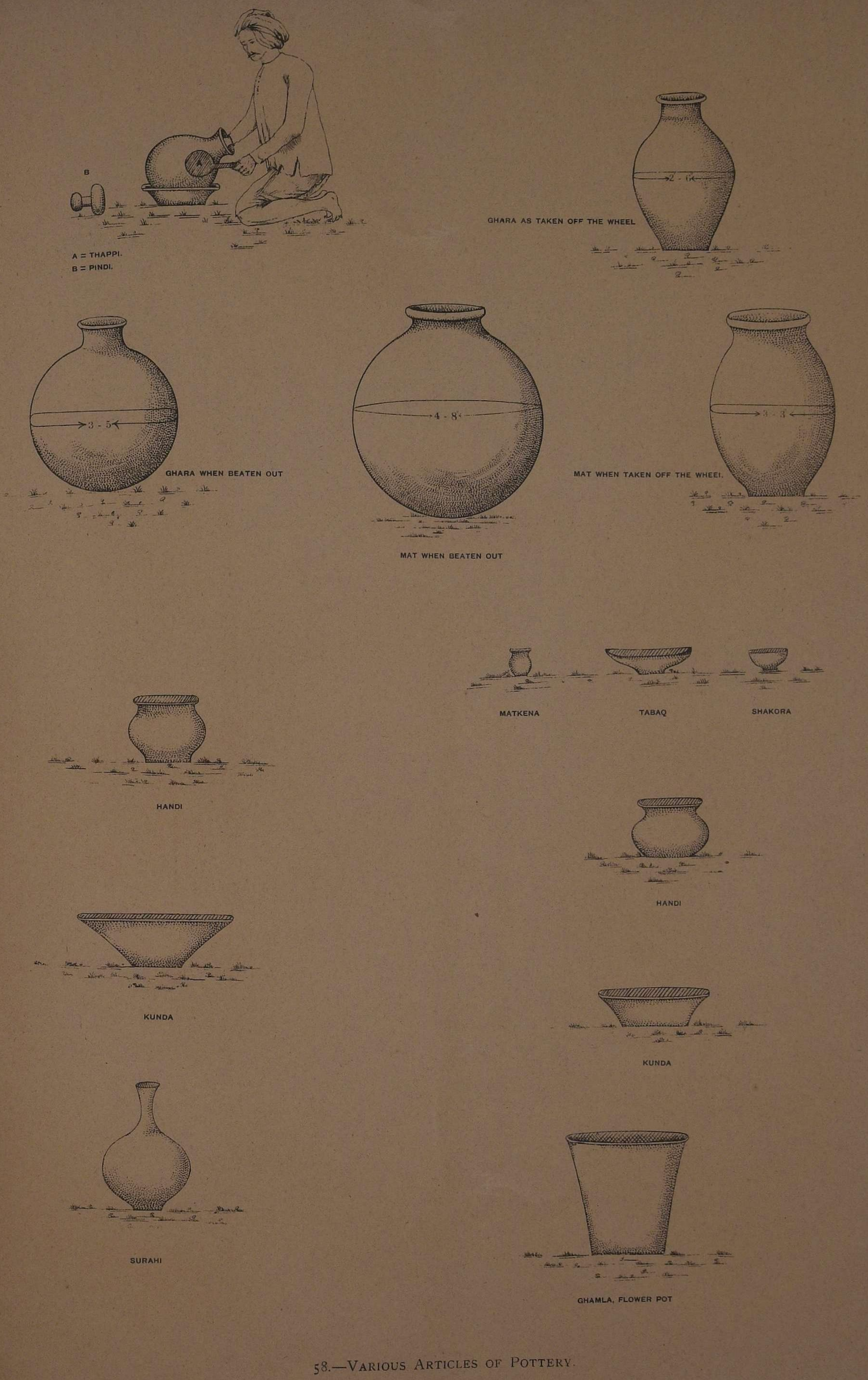
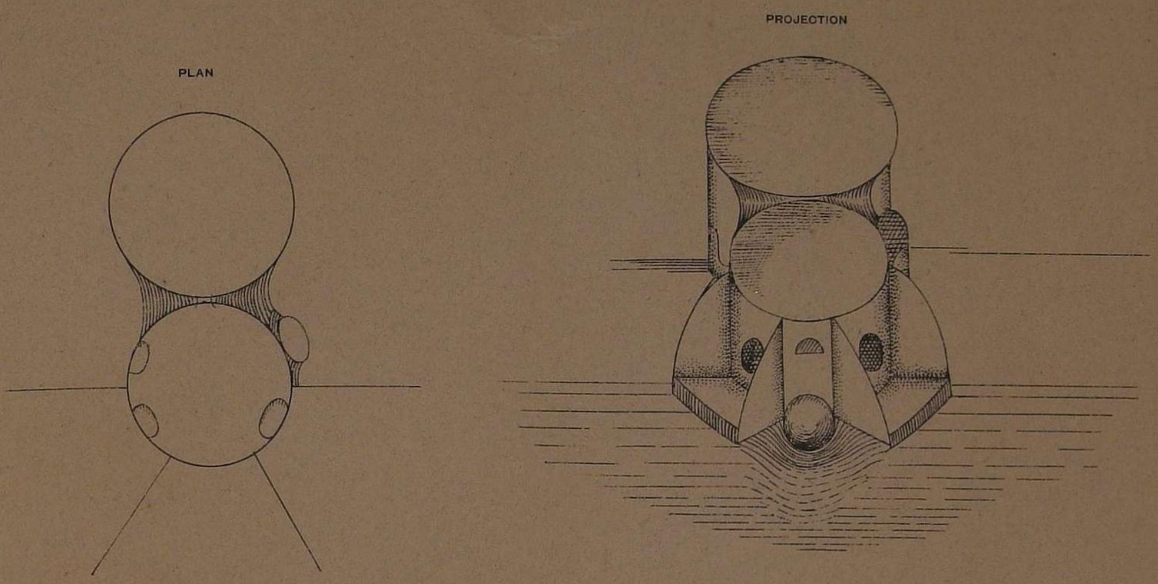
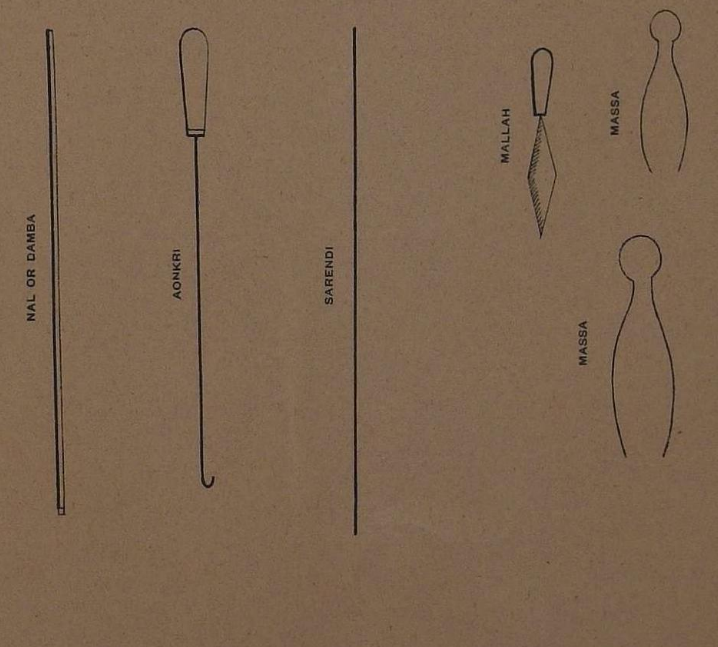
57.—Lucknow Glass Ware (see Chapter XII).



58.—Various Articles of Pottery.





59.—Furnace and Tools used in Glass-Making.

DRAWN BY SOHAN LALL,
ARCH. SURVEY, N.W.P.

51.—ALIGARH POTTERY, unglazed.

Size of originals.

DRAWN BY FAZLUD DIN II.
ARCH. SURVEY, N.W.P.

52.—Lucknow Pottery.

DRAWN BY BHAIRAV BAKHSH,
ARCH. SURVEY N.W.P. AND OUDH.

53.—LUCKNOW CLAY FIGURES.

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